<u>IN THE CLAIMS</u>:

The following is a complete listing of the claims in this application, reflects all changes currently being made to the claims, and replaces all earlier versions and all earlier listings of the claims:

1.   (Currently Amended) A coding device for encoding image data, comprising:

transforming means for performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

coding means for entropy-coding each of said sub-bands <u>and</u> <u>generating entropy-coded data for each of said sub-bands</u>; and

generating means for monitoring the amount of <u>entropy-coded data</u> <u>of</u> a predetermined sub-band in said each sub-band, and if <u>the amount</u> ~~the predetermined~~ ~~sub-band~~ exceeds a predetermined code length, removing <u>exceeded</u> coded data <u>from</u> <u>entropy-coded data of the predetermined sub-band</u> ~~included in an area where the sub-band~~ ~~exceeds the predetermined code length~~, and if <u>the amount</u> ~~predetermined sub-band~~ does not reach said predetermined code length, adding dummy data to the coded data of <u>the</u> <u>predetermined</u> [[said]] sub-band, thereby generating fixed length coded data of said predetermined code length<u>,</u>

<u>wherein said predetermined sub-band includes at least a lowest</u> <u>frequency sub-band, said generating means generates at least fixed length coded data for</u> <u>the lowest frequency sub-band.</u>

2.   (Currently Amended) The coding device according to claim 1, further comprising:

inputting means for inputting image data ~~with voice~~ and audio data; and

~~separating means for separating image data and voice information from the image data with voice inputted by said inputting means;~~

~~wherein the image data obtained by separation by said separating means is defined as an object to be transformed by said transforming means, and for the voice information obtained by separation, coding with little information loss is performed~~

audio encoding means for encoding audio data inputted by said inputting means.

3.   (Original) The coding device according to claim 1, wherein for the sub-band to be subjected to removal, bit planes are removed in ascending order with the lowest bit plane of bit planes expressing the sub-band being first.

4.   (Original) The coding device according to claim 1, wherein said generating means further comprises means for defining the lowest frequency sub-band of sub-bands obtained by said transforming means as said predetermined sub-band, and making its coded data to be fixed length data.

5.   (Original) The coding device according to claim 1, wherein said generating means further comprises means for defining each of sub-bands obtained by said transforming means as a predetermined sub-band, and defining the coded data of each sub-band as fixed length data.

6. (Original The coding device according to claim 1, wherein said generating means further comprises means for defining a resolution level constituted by a certain number of sub-bands of the sub-bands obtained by said transforming means as a unit, and defining coded data of such unit as fixed length data.

7. (Original) The coding device according to claim 1, wherein said generating means generates a header when generating said fixed length coded data, and information about said fixed length coded data is written in this header.

8. (Original) The coding device according to claim 1, wherein said transforming means comprises storing means for storing therein said transformation factor on a temporary basis, and quantization is performed in the order of from a lower level sub-band to a higher level sub-band from this storing means.

9. (Original) The coding device according to claim 8, wherein said transforming means gives a larger quantizing step to a higher sub-band at the time of said quantization.

10. (Currently Amended) A coding method of encoding image data, comprising:

a transforming step of performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

a coding step [[of]] for entropy-coding each of said sub-bands and generating entropy-coded data for each of said sub-bands; and

a generating step [[of]] for monitoring the amount of <u>entropy-coded</u> <u>data of</u> a predetermined sub-band in said each sub-band, and if <u>the amount</u> ~~the~~ ~~predetermined sub-band~~ exceeds a predetermined code length, removing <u>exceeded</u> coded data <u>from entropy-coded data of the predetermined sub-band</u> ~~included in an area where the~~ ~~sub-band exceeds the predetermined code length~~, and if <u>the amount</u> ~~the predetermined sub-~~ ~~band~~ does not reach said predetermined code length, adding dummy data to the coded data of <u>the predetermined</u> [[said]] sub-band, thereby generating fixed length coded data of said predetermined code length<u>,</u>

<u>wherein said predetermined sub-band includes at least a lowest</u> <u>frequency sub-band, at least fixed length coded data for the lowest frequency sub-band is</u> <u>generated in said generating step.</u>

11.　(Currently Amended)　The coding method according to claim 10, further comprising:

an inputting step [[of]] <u>for</u> inputting image ~~data with voice~~ <u>and audio</u> <u>data</u>; and

~~a separating step of separating image data and voice information~~ ~~from the image data with voice inputted in said inputting step;~~

~~wherein the image data obtained by separation in said separating step~~ ~~is defined as an object to be transformed in said transforming step, and for the voice~~ ~~information obtained by separation, coding with little information loss is performed,~~

<u>an audio encoding step, of encoding audio data inputted in said</u> <u>inputting step.</u>

12.   (Currently Amended) A storage medium storing therein program codes functioning as a coding device for encoding image data, comprising:

a program code of a transforming step of performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

a program code of a coding step [[of]] for entropy-coding each of said sub-bands and generating entropy-coded data for each of said sub-bands; and

a program code of a generating step [[of]] for monitoring the amount of entropy-coded data of a predetermined sub-band in said each sub-band, and if the amount the predetermined sub-band exceeds a predetermined code length, removing exceeded coded data from entropy-coded data of the predetermined sub-band included in an area where the sub-band exceeds the predetermined code length, and if the amount the predetermined sub-band does not reach said predetermined code length, adding dummy data to the coded data of the predetermined [[said]] sub-band, thereby generating fixed length coded data of said predetermined code length,

wherein said predetermined sub-band includes at least a lowest frequency sub-band, at least fixed length coded data for the lowest frequency sub-band is generated in the generating step.

13.   (Currently Amended) The storage medium according to claim 12, further comprising:

a program code of an inputting step [[of]] for inputting image data with voice and audio data; and

a program code of a separating step of separating image data and voice information from the image data with voice inputted in said inputting step;

wherein the image data obtained by separation in said separating step is defined as an object to be transformed in said transforming step, and for the voice information obtained by separation, coding with little information loss is performed

a program code of an audio encoding step of encoding audio data inputted in said inputting step.

14.   (Currently Amended) A coding method of encoding image data of each frame constituting [[an]] a motion image, comprising:

a transforming step of performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

a coding step of entropy-coding each of said sub-bands and generating entropy-coded data for each of said sub-bands; and

a generating step of monitoring the amount of [[a]] entropy-coded data of a predetermined sub-band in said each sub-band, and if the amount the predetermined sub-band exceeds a predetermined code length, removing exceeded coded data from entropy-coded data of the predetermined sub-band included in an area where the sub-band exceeds the predetermined code length, and if the amount the predetermined sub-band does not reach said predetermined code length, adding dummy data to the coded data of the predetermined [[said]] sub-band, thereby generating fixed length coded data of said predetermined code length,

wherein said predetermined sub-band includes at least a lowest frequency sub-band, at least fixed length coded data for the lowest frequency sub-band is generated in said generating step.

15.   (Currently Amended) The coding method according to claim 14, wherein the predetermined sub-band of which said coded data is [[length-fixed]] fixed-length is the lowest frequency sub-band.

16.   (Currently Amended) The coding method according to claim 14, wherein the predetermined sub-bands of which said coded data are [[length-fixed]] fixed-length are the lowest frequency sub-band and higher frequency sub-bands subsequent thereto.

17.   (Currently Amended) A coding device for encoding image data of each frame constituting [[an]] a motion image, comprising:

transforming means for performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

coding means for entropy-coding each of said sub-bands and generating entropy-coded data for each of said sub-bands; and

generating means for monitoring the amount of entropy-coded data of a predetermined sub-band in said each sub-band, and if the amount the predetermined sub-band exceeds a predetermined code length, removing exceeded coded data from entropy-coded data of the predetermined sub-band included in an area where the sub-band exceeds the predetermined code length, and if the amount the predetermined sub-band does not reach said predetermined code length, adding dummy data to the coded data of the predetermined [[said]] sub-band, thereby generating fixed length coded data of said predetermined code length,

wherein the predetermined sub-band includes at least lowest

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frequency sub-band, and at least fixed-length coded data for the lowest frequency sub-band is generated in said generating means.

18.   (Currently Amended) A storage medium storing therein program codes functioning as a coding device for encoding image data of each frame constituting [[an]] a motion image, comprising:

a program code of a transforming step of performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

a program code of a code transforming step [[of]] for entropy-coding each of said sub-bands and generating entropy-coded data for each of said sub-bands; and

a program code of a generating step [[of]] for monitoring the amount of entropy-coded data of a predetermined sub-band in said each sub-band, and if the amount the predetermined sub-band exceeds a predetermined code length, removing exceeded coded data from entropy-coded data of the predetermined sub-band included in an area where the sub-band exceeds the predetermined code length, and if the amount the predetermined sub-band does not reach said predetermined code length, adding dummy data to the coded data of the predetermined said sub-band, thereby generating fixed length coded data of said predetermined code length,

wherein the predetermined sub-band includes at least lowest frequency sub-band, and at least fixed length coded data for the lowest frequency sub-band is generated in the generating step.

19.   (Currently Amended) An image playing-back method of decoding/playing-back according to 1 to n-fold playback speeds each frame image entropy-

coded data obtained by dividing image data of each frame constituting [[an]] a motion

image into frequency sub-bands and encoding the same so that the entropy-coded data of

predetermined sub-bands of the frequency sub-bands are [[length-fixed]] fixed length,

wherein at least one of [[said length-fixed]] the fixed-length entropy-

coded data are decoded as objects to be decoded, and are played back as images of frames to

be decoded, in accordance with [[said]] the playback speed,

wherein the predetermined sub-band includes at least a lowest

frequency sub-band, and the length of entropy-coded of the lowest frequency sub-band for

each frame is fixed.

20.   (Currently Amended) The playing-back method according to claim

19, wherein the predetermined sub-band of which [[said]] the coded data is [[length-fixed]]

fixed length is the lowest frequency sub-band, and the coded data of [[said]] the lowest

frequency sub-band is decoded as an object to be decoded in accordance with [[said]] the

playback speeds, and is played back as an image of a frame to be decoded.

21.   (Currently Amended) The playing-back method according to claim

19, wherein the predetermined sub-bands of which [[said]] the coded data are

[[length-fixed]] fixed length are the lowest frequency sub-band and higher frequency

sub-bands subsequent thereto, and the coded data of the lowest frequency component, or

some coded data of the lowest frequency component and higher frequency sub-bands

subsequent thereto are decoded as objects to be decoded in accordance with [[said]] the

playback speeds, and are played back as images of frames to be decoded.

22.   (Currently Amended) An image playing-back device for

decoding/playing-back according to 1 to n-fold playback speeds each frame image entropy-coded data obtained by dividing image data of each frame constituting [[an]] a motion image into frequency sub-bands and encoding the same so that the entropy-coded data of predetermined sub-bands of the frequency sub-bands are [[length-fixed]] fixed length, comprising:

playing-back means for decoding at least one of [[said]] the [[length-fixed]] fixed length entropy-coded data and playing back the same as images of frames to be decoded, in accordance with [[said]] the playback speed,

wherein the predetermined sub-band includes at least a lowest frequency sub-band, and the length of entropy-coded of the lowest frequency sub-band for each frame is fixed.

23.   (Currently Amended) A storage medium storing therein program codes functioning as an image playing-back device for decoding/playing-back according to 1 to n-fold playback speeds each frame image entropy-coded data obtained by dividing image data of each frame constituting [[an]] a motion image into frequency sub-bands and encoding the same so that the entropy-coded data of predetermined sub-bands of the frequency sub-bands are length-fixed, comprising:

a program code of a generating step [[of]] for decoding at least one of [[said]] the length-fixed entropy-coded data and playing back the same as images of frames to be decoded, in accordance with [[said]] the playback speed,

wherein the predetermined sub-band includes at least a lowest frequency sub-band, and the length of entropy-coded of the lowest frequency sub-band for each frame is fixed.

24.   (Currently Amended) A coding method of encoding image data of each frame constituting [[an]] a motion image, comprising:

a transforming step, of performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

a dividing step, of dividing into code blocks a plurality of frequency sub-bands obtained in said transforming step;

a decomposing step, of forming into bit planes the code blocks obtained in said dividing step, and decomposing each bit plane into three coding passes;

a coding step, of encoding [[said]] each coding pass, and distributing the obtained coded data to a plurality of layers, thereby generating coded data having a layer structure; and

a code length controlling step, of controlling the coded data of a predetermined layer in [[said]] each layer so that it takes on a predetermined code length,

wherein the predetermined layer includes at least an uppermost layer, and the coded data of the uppermost layer is fixed-length coded data.

25.   (Currently Amended) The coding method according to claim [[23]] 24, wherein the predetermined layer of which [[said]] the coded data is [[length-fixed]] fixed length is a layer including coding passes for constructing the uppermost bit plane obtained in said decomposing step.

26.   (Currently Amended) The coding method according to claim [[23]] 24, wherein the predetermined layer of which [[said]] the coded data is [[length-fixed]] fixed length is each of a plurality of layers.

27.   (Currently Amended) A coding device for encoding image data of each frame constituting [[an]] a motion image, comprising:

transforming means for performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

dividing means for dividing into code blocks a plurality of frequency sub-bands obtained [[in]] from said transforming [[step]] means;

decomposing means for forming into bit planes the code blocks obtained in said dividing [[step]] means, and decomposing each bit plane into three coding passes;

coding means for encoding [[said]] each coding pass, and distributing the obtained coded data to a plurality of layers, thereby generating coded data having a layer structure; and

code length controlling for controlling the coded data of a predetermined layer in [[said]] each layer so that it takes on a predetermined code length,

wherein said predetermined layer includes at least an uppermost layer, and the coded data of the uppermost layer is fixed length coded data.

28.   (Currently Amended) A storage medium storing therein program codes functioning as a coding device for encoding image data of each frame constituting [[an]] a motion image, comprising:

a program code of a transforming step of performing discrete wavelet transformation on inputted image data, thereby generating transformation factors of a plurality of frequency sub-bands;

a program code of a dividing step of dividing into code blocks a

plurality of frequency sub-bands obtained in said transforming step;

a program code of a decomposing step of forming into bit planes the code blocks obtained in said dividing step, and decomposing each bit plane into three coding passes;

a program code of a coding step of encoding said each coding pass, and distributing the obtained coded data to a plurality of layers, thereby generating coded data having a layer structure; and

a program code of a code length controlling step of controlling the coded data of a predetermined layer in said each layer so that it takes on a predetermined code length,

wherein said predetermined layer includes at least an uppermost layer, and the coded data of the uppermost layer is fixed length coded data.

29. (Currently Amended) An image playing-back method of forming into bit planes transformation factors obtained by subjecting image data of each frame constituting [[an]] a motion image to wavelet transformation, decomposing each bit plane into three coding passes, distributing coded data expressing these coding passes to a plurality of layers, and decoding/playing-back each frame image coded data subjected to length fixation according to 1 to n-fold playback speeds for the coded data of predetermined layers,

wherein at least one of [[said]] the [[length-fixed]] fixed-length coded data are decoded as objects to be decoded, and are played back as images of frames to be decoded, in accordance with [[said]] the playback speed,

wherein the predetermined layer includes at least an uppermost layer, and the coded data of the uppermost layer is fixed length coded data.

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30. (Currently Amended) The coding ~~method~~ device according to claim 27, wherein the predetermined layer of which [[said]] the coded data is [[length-fixed]] fixed length is a layer including coding passes for constructing the uppermost bit plane in [[said]] each bit plane.

31. (Currently Amended) The coding ~~method~~ device according to claim 27, wherein the predetermined layer of which [[said]] coded data is [[length-fixed]] fixed length is each of a plurality of layers.

32. (Currently Amended) An image playing-back device for forming into bit planes transformation factors obtained by subjecting image data of each frame constituting [[an]] a motion image to wavelet transformation, decomposing each bit plane into three coding passes, distributing coded data expressing these coding passes to a plurality of layers, and decoding/playing-back each frame image coded data subjected to length fixation according to 1 to n-fold playback speeds for the coded data of predetermined layers, comprising:

means for decoding at least one of [[said length-fixed]] fixed-length coded data and playing back the same as images of frames to be decoded, in accordance with [[said]] the playback speed,

wherein the predetermined layer includes at least an uppermost layer, and the coded data of the uppermost layer is fixed-length coded data.

33. (Currently Amended) A storage medium storing therein program codes functioning as an image playing-back device for forming into bit planes transformation factors obtained by subjecting image data of each frame constituting [[an]] a

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motion image to wavelet transformation, decomposing each bit plane into three coding

passes, distributing coded data expressing these coding passes to a plurality of layers, and

decoding/playing-back each frame image coded data subjected to length fixation according

to 1 to n-fold playback speeds for the coded data of predetermined layers, comprising:

a program code of a step of decoding at least one of [[said

length-fixed]] fixed-length coded data and playing back the same as images of frames to be

decoded, in accordance with [[said]] the playback speed,

wherein the predetermined layer includes at least an uppermost layer,

and the coded data of the uppermost layer is fixed-length coded data.